



BUSA7000

Techniques in Business Analytics

Session 1, In person-scheduled-weekday, North Ryde 2022

Department of Actuarial Studies and Business Analytics

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General Information

Unit convenor and teaching staff Unit Convenor Ken Siu ken.siu@mq.edu.au
Credit points 10
Prerequisites Admission to Master of Research
Corequisites
Co-badged status
Unit description This unit develops some of the core skills needed for the practice of modern business analytics. Statistical inference and associated statistical computing will be covered along with an introduction to analytical techniques needed for working with both structured and unstructured data. The reporting of the results from quantitative style research will also be studied.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

- ULO1:** Perform a review of the literature relevant to an aspect of business analytics.
- ULO2:** Apply methods for handling data in R.
- ULO3:** Implement statistical learning algorithms in R.
- ULO4:** Apply appropriate statistical methods/models, and perform analysis on various types of data and interpret the result.
- ULO5:** Understand and apply the principles of statistical inference.

General Assessment Information

Assessment criteria for all assessment tasks will be provided on the unit iLearn site.

It is the responsibility of students to view their marks for each within-session-assessment on iLearn within 20 days of posting. If there are any discrepancies, students must contact the unit convenor immediately. Failure to do so will mean that queries received after the release of final results regarding assessment tasks (not including the final exam mark) will not be addressed.

Late submissions of assessments Unless a Special Consideration request has been submitted and approved, no extensions will be granted. There will be a deduction of 10% of the total available assessment-task marks made from the total awarded mark for each 24-hour period or part thereof that the submission is late. Late submissions will only be accepted up to 96 hours after the due date and time.

No late submissions will be accepted for timed assessments – e.g., quizzes, online tests.

Table 1: Penalty calculation based on submission time

Submission time after the due date (including weekends)	Penalty (% of available assessment task mark)	Example: for a non-timed assessment task marked out of 30
< 24 hours	10%	10% x 30 marks = 3-mark deduction
24-48 hours	20%	20% x 30 marks = 6-mark deduction
48-72 hours	30%	30% x 30 marks = 9-mark deduction
72-96 hours	40%	40% x 30 marks = 12-mark deduction
> 96 hours	100%	Assignment won't be accepted

Special Consideration

To request an extension on the due date/time for a timed or non-timed assessment task, you must submit a Special Consideration application. An application for Special Consideration does not guarantee approval.

The approved extension date for a student becomes the new due date for that student. The late submission penalties above then apply as of the new due date.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Online Quiz 1</u>	10%	No	Week 5
<u>Literature Review</u>	20%	No	Week 7
<u>Online Quiz 2</u>	10%	No	Week 10
<u>Final Examination</u>	60%	No	University Examination Period 6 to 24 June

Online Quiz 1

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 5 hours

Due: **Week 5**

Weighting: **10%**

Students will be given a dataset and required to perform various calculations based on the techniques taught in classes.

On successful completion you will be able to:

- Apply methods for handling data in R.
- Implement statistical learning algorithms in R.

Literature Review

Assessment Type ¹: Literature review

Indicative Time on Task ²: 15 hours

Due: **Week 7**

Weighting: **20%**

Students will produce a literature review on a particular topic. Details will be provided on iLearn.

On successful completion you will be able to:

- Perform a review of the literature relevant to an aspect of business analytics.
- Apply methods for handling data in R.
- Implement statistical learning algorithms in R.

Online Quiz 2

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 5 hours

Due: **Week 10**

Weighting: **10%**

Students will complete some multiple choice and/or short answer questions.

On successful completion you will be able to:

- Apply appropriate statistical methods/models, and perform analysis on various types of data and interpret the result.
- Understand and apply the principles of statistical inference.

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 20 hours

Due: **University Examination Period 6 to 24 June**

Weighting: **60%**

A two hour exam to be held during the University Exam Period.

On successful completion you will be able to:

- Apply appropriate statistical methods/models, and perform analysis on various types of data and interpret the result.
- Understand and apply the principles of statistical inference.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Delivery

Please refer to iLearn for details. It is the responsibility of individual students to stay up to date with the unit material.

Recommended Texts

1. *R for Data Science*, Wickham and Grolemund
2. *An Introduction to Statistical Learning*, James et al.
3. *Collaborative Statistics*, Illowsky and Dean

These are all open-source textbooks and are available freely and legally online.

Some references or recommended reading materials will be introduced whenever appropriate. Please refer to iLearn for details.

Technology Used and Required

Calculator

A calculator will be required during the Final Examination. **Note:** students are expected to clearly show all steps (working) in their solutions to 'calculation' questions.

Non-programmable calculators with no text-retrieval functionality are permitted. Calculators that have a full alphabet on the keyboard are not permitted. Graphics calculators are not permitted. Calculators need the following minimum functionality: xy or $^$, $1/x$ and \log or \ln functions, and a memory. Non-programmable financial calculators are permitted but it is not a requirement to use a financial calculator.

Students are assumed to already be familiar with the basic operation of their calculator prior to the start of this unit.

Computing

Prior to the start of this unit, students are expected to be familiar at least with the basic operation of their computing device.

Software

This unit does use R. Whilst it is not strictly necessary that students have any background using R, it will certainly be beneficial.

Knowledge of Mathematics and Statistics

A background of basic mathematics and statistics is assumed. Students entering the unit should be familiar with basic calculus, as well as concepts such as expected value, variance, and standard deviation.

Unit Schedule

Please refer to iLearn.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)

- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.